

Deepwater Horizon – Data Validation Report

P.I.A.N.O. Volatile Organic Compounds

SDG: 1005012	Matrix: Water	Number of Samples: 14
Laboratory: Alpha Analytical Services		Method/SOP: Alpha VOC_Piano SOP/0-019 (Issue 2)
Validation Level: Stage 2B Validation		Validation Criteria Table: MC252-VOC, Rev. 0
Date of Report: July 19, 2010		Approved for Release:

Refer to the *ATTACHMENT 1: SAMPLE INDEX* for a list of validated samples.

Refer to the *DATA VALIDATION PLAN* for validation approach, Criteria Tables, qualifier and reason code definitions.

The quality control (QC) elements that were reviewed are listed below.

√	Data Package Completeness	1	Sample Duplicate Analysis
√	Verification of EDD to Hardcopy Data Package	1	Blank Spike/Blank Spike Duplicate Sample Analyses
√	Chain-of-Custody and Sample Receipt	1	Reference Material Analysis
√	Holding Times	√	Internal Standards
√	Instrument Tuning	2	Detection Limits
2	Initial Calibration	√	Target Analyte List
√	Initial Calibration Verification	√	Compound Quantitation
2	Continuing Calibration	NA	Spectral Match (Stage 4 only)
2	Method Blank Analysis	NA	Calculation Verification (Stage 4 only)
√	Surrogate Compound Recovery		

√ Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.

1 Quality control results are discussed below, but no data were qualified.

2 Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed in this Data Validation Report.

Overall Assessment

Results were estimated based initial calibration %RSD and continuing calibration %D outliers. Detection limits were elevated and estimated because of method blank contamination.

All data, as qualified, are acceptable for use.

Data Package Completeness

The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative. The laboratory submitted all required deliverables.

Verification of EDD to Hardcopy Data Package

Sample results and related quality control data were received in both an electronic and hardcopy format. Electronic data were verified against the laboratory report; no errors were found.

Chain-of-Custody and Sample Receipt

All sample identification (ID) numbers listed on the chain-of-custody record are consistent with the sample ID reported in the laboratory electronic data deliverable (EDD) and hardcopy data package.

All volatile samples were preserved in the field with hydrochloric acid (HCl); displayed no headspace; and were received within the advisory temperature range of 2° to 6°C (Analytical Quality Assurance Plan (AQAP), Section 3.1). The laboratory noted all sample conditions on the sample receipt form.

Holding Times

All samples were analyzed within the holding time specified in the Analytical AQAP, Section 3.1, and documented in the Validation Criteria Table.

Instrument Tuning

Instrument tuning was performed at the required frequency and met all criteria as specified in EPA SW846 Method 8260.

Initial Calibration

With the exceptions noted below, initial calibration (ICAL) standards were analyzed at the required frequency and the percent difference (%RSD) values were within the control limits specified in the AQAP, Table 6.1c and documented in the Validation Criteria Table.

ICAL Date	Instrument ID	Analyte	% RSD
5/15/10	VOA6	dodecane	30.9
		tridecane	25.2

If the %RSD values are greater than control limits, positive results in associated samples are estimated (J-5A). However, all but two results for dodecane and all but three results for tridecane were qualified as not detected due to method blank contamination; no ICAL qualifiers were applied to these non-detect results.

The analyte tertiary butanol was calibrated using a four point curve. The reporting limits for non-detected results were elevated to the lowest concentration of the calibration curve. No positive results were reported for this analyte.

Initial Calibration Verification

All initial calibration verification (ICV) standards were analyzed required frequency and the percent recovery (%R) values were within the control limits specified in the AQAP, Table 6.1c and documented in the Validation Criteria Table. The ICV was a separate standard prepared from a second source.

Continuing Calibration

With the exceptions noted below, continuing calibration (CCAL) standards were analyzed at the required frequency and the percent difference (%D) values were within the control limits specified in the AQAP, Table 6.1c and documented in the Validation Criteria Table.

CCAL Date	Instrument ID	Analyte	%D	Bias
5/23/10	VOA6	tridecane	26.9	Low

If the %D values indicate a potential low bias, the positive results and detection limits in associated samples are estimated (J/UJ-5B). If the %D values indicate a potential high bias, only the positive results in associated samples are estimated (J-5B).

Method Blank Analysis

To assess the impact of each blank contaminant on the reported sample results, two action levels are established at two (2x) and five times (5x) the concentration reported in the blank. If a contaminant is reported in an associated field sample and the concentration is less than the lower (2x) action level, the result is qualified as not detected (U-7). If a contaminant is reported in an associated field sample and the concentration is less than the higher (5x) action level, the result is qualified as estimated (J-7). If the result is also less than the reporting limit, then the result is elevated to the reporting limit. No action is taken if the sample result is greater than the higher action level, or for non-detected results.

Method blanks were analyzed at the appropriate frequency. Various target analytes were detected in the method blanks; the attached table, **ATTACHMENT 2: METHOD BLANK QUALIFIED RESULTS**, lists only those samples that required qualification.

Surrogate Compound Recovery

All the percent recovery (%R) values for surrogates were within the control limits of 70 – 130%.

Sample Duplicate Analysis

One sample from each analytical batch (of 20 or fewer samples) was extracted and analyzed in duplicate. Where analyte concentrations in the parent sample were greater than the quantitation limit (QL), the relative percent difference (RPD) was calculated.

Parent Sample: JF.2KM.LEESURF.WV.20100513.N166+167 Duplicate Sample: Same

All RPD values were less than the control limit of $\leq 30\%$.

Blank Spike/Blank Spike Duplicate Sample Analyses

One set of blank spike/blank spike duplicate (BS/BSD) samples (for each analytical batch of 20 or fewer samples) was extracted and analyzed. The percent recovery (%R) and relative percent difference (RPD) were calculated and evaluated.

With the exceptions noted below, the %R values were within the criteria of 50 – 130%.

Analyte	BS %R	BSD %R	Potential Bias
dodecane	135	116	High
1-pentene	102	141	High
tertiary butanol	102	139	High
cyclopentane	103	141	High
2-methylpentane	99	131	High

Only the BS or BSD %R values were greater than the upper control limit. No qualifiers were applied for these single outliers.

With the exceptions noted below, RPD values were less than the control limit of $\leq 30\%$.

Analyte	RPD
tertiary butanol	31
cyclopentane	31

These analytes were not detected in the associated samples; no qualifiers were applied.

Reference Material Analysis

An aliquot of Gasoline Reference Oil LD-7 was analyzed with each set of samples.

All recovery values were within the laboratory defined criteria of 65% – 135%.

Internal Standards

All the percent recovery (%R) values for internal standards (IS) were within the control limits of 50 – 200% of the area in the associated CCAL.

Compound Quantitation

The laboratory applied a J-flag to all results between the quantitation limit (QL) and the method detection limit (MDL).

During validation, results less than the MDL were qualified as “found” (F).

Attachment 1: Sample Index - SDG 1005012
P.I.A.N.O. Volatile Organic Compounds

Sample ID	Lab ID	Date Collected
JF.4KM.SURF.DIWV.20100512.N114+115	1005012-01	5/12/10
JF.8KM.SURF.WV.20100512.N069+070	1005012-02	5/12/10
JF.8KM.BLANK.DIWV.20100512.N073+074	1005012-03	5/12/10
JF.8KM.MIX.30.WV.20100512.N066+065	1005012-04	5/12/10
JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05	5/13/10
JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05D	5/13/10
JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06	5/13/10
JF.4KM.240FT.WV.20100512.N098+099	1005012-07	5/13/10
JF.4KM.240FT.WV.20100512.N098+099	1005012-07E	5/13/10
JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08	5/13/10
JF.2KM.135FT.WV.20100513.N130+131	1005012-09	5/13/10
JF.2KM.DEEP.WV.20100513.N123+122	1005012-10	5/13/10
JF.2KM.MIX30.WV.20100513.N139+138	1005012-11	5/13/10
JF.2KM.400.WV.20100513.N150+151	1005012-12	5/13/10
JF.2KM.SURF.WV.20100513.N146+147	1005012-13	5/13/10
JF.2KM.400.WV.DUP.20100513.N158+159	1005012-14	5/13/10

Attachment 2: Method Blank Qualified Results - SDG 1005012
P.I.A.N.O. Volatile Organic Compounds

Analyte Name	DV Qualifier	Client Sample ID	Laboratory ID
Isopentane	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
Isopentane	J	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
Isopentane	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13
Pentane	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
Pentane	U	JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08
Pentane	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
Pentane	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13
Methylcyclopentane	U	JF.4KM.SURF.DIWV.20100512.N114+115	1005012-01
Methylcyclopentane	U	JF.8KM.BLANK.DIWV.20100512.N073+074	1005012-03
Methylcyclopentane	J	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05
Methylcyclopentane	J	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05D
Methylcyclopentane	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
Cyclohexane	U	JF.4KM.SURF.DIWV.20100512.N114+115	1005012-01
Cyclohexane	U	JF.8KM.SURF.WV.20100512.N069+070	1005012-02
Cyclohexane	U	JF.8KM.BLANK.DIWV.20100512.N073+074	1005012-03
Cyclohexane	U	JF.8KM.MIX.30.WV.20100512.N066+065	1005012-04
Cyclohexane	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05
Cyclohexane	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05D
Cyclohexane	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
Cyclohexane	U	JF.4KM.240FT.WV.20100512.N098+099	1005012-07
Cyclohexane	U	JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08
Cyclohexane	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
Cyclohexane	U	JF.2KM.DEEP.WV.20100513.N123+122	1005012-10
Cyclohexane	U	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
Cyclohexane	U	JF.2KM.400.WV.20100513.N150+151	1005012-12
Cyclohexane	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13
Cyclohexane	U	JF.2KM.400.WV.DUP.20100513.N158+159	1005012-14
Benzene	U	JF.4KM.SURF.DIWV.20100512.N114+115	1005012-01
Benzene	U	JF.8KM.SURF.WV.20100512.N069+070	1005012-02
Benzene	U	JF.8KM.BLANK.DIWV.20100512.N073+074	1005012-03
Benzene	U	JF.8KM.MIX.30.WV.20100512.N066+065	1005012-04
Benzene	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05
Benzene	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05D
Benzene	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
Benzene	U	JF.4KM.240FT.WV.20100512.N098+099	1005012-07
Benzene	U	JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08
Benzene	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
Benzene	U	JF.2KM.DEEP.WV.20100513.N123+122	1005012-10
Benzene	U	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11

Analyte Name	DV Qualifier	Client Sample ID	Laboratory ID
Benzene	U	JF.2KM.400.WV.20100513.N150+151	1005012-12
Benzene	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13
Benzene	U	JF.2KM.400.WV.DUP.20100513.N158+159	1005012-14
Toluene	U	JF.4KM.SURF.DIWV.20100512.N114+115	1005012-01
Toluene	U	JF.8KM.SURF.WV.20100512.N069+070	1005012-02
Toluene	U	JF.8KM.BLANK.DIWV.20100512.N073+074	1005012-03
Toluene	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05
Toluene	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05D
Toluene	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
Toluene	U	JF.4KM.240FT.WV.20100512.N098+099	1005012-07
Toluene	U	JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08
Toluene	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
Toluene	U	JF.2KM.DEEP.WV.20100513.N123+122	1005012-10
Toluene	U	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
Toluene	U	JF.2KM.400.WV.20100513.N150+151	1005012-12
Toluene	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13
Toluene	U	JF.2KM.400.WV.DUP.20100513.N158+159	1005012-14
Ethylbenzene	U	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
p/m-Xylene	U	JF.8KM.SURF.WV.20100512.N069+070	1005012-02
p/m-Xylene	U	JF.4KM.240FT.WV.20100512.N098+099	1005012-07
p/m-Xylene	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
p/m-Xylene	J	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
o-Xylene	J	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
Decane	U	JF.8KM.BLANK.DIWV.20100512.N073+074	1005012-03
Decane	U	JF.8KM.MIX.30.WV.20100512.N066+065	1005012-04
Decane	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05
Decane	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05D
Decane	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
Decane	U	JF.4KM.240FT.WV.20100512.N098+099	1005012-07
Decane	U	JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08
Decane	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
Decane	U	JF.2KM.DEEP.WV.20100513.N123+122	1005012-10
Decane	U	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
Decane	U	JF.2KM.400.WV.20100513.N150+151	1005012-12
Decane	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13
Decane	U	JF.2KM.400.WV.DUP.20100513.N158+159	1005012-14
1,2,4-Trimethylbenzene	U	JF.4KM.240FT.WV.20100512.N098+099	1005012-07
1,2,4-Trimethylbenzene	U	JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08
1,2,4-Trimethylbenzene	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
1,2,4-Trimethylbenzene	J	JF.2KM.DEEP.WV.20100513.N123+122	1005012-10
1,2,4-Trimethylbenzene	J	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
1,2,4-Trimethylbenzene	U	JF.2KM.400.WV.20100513.N150+151	1005012-12
1,2,4-Trimethylbenzene	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13

Analyte Name	DV Qualifier	Client Sample ID	Laboratory ID
1,2,4-Trimethylbenzene	U	JF.2KM.400.WV.DUP.20100513.N158+159	1005012-14
Undecane	U	JF.4KM.SURF.DIWV.20100512.N114+115	1005012-01
Undecane	U	JF.8KM.SURF.WV.20100512.N069+070	1005012-02
Undecane	U	JF.8KM.BLANK.DIWV.20100512.N073+074	1005012-03
Undecane	U	JF.8KM.MIX.30.WV.20100512.N066+065	1005012-04
Undecane	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05
Undecane	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05D
Undecane	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
Undecane	U	JF.4KM.240FT.WV.20100512.N098+099	1005012-07
Undecane	U	JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08
Undecane	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
Undecane	U	JF.2KM.DEEP.WV.20100513.N123+122	1005012-10
Undecane	U	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
Undecane	U	JF.2KM.400.WV.20100513.N150+151	1005012-12
Undecane	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13
Undecane	U	JF.2KM.400.WV.DUP.20100513.N158+159	1005012-14
Dodecane	U	JF.4KM.SURF.DIWV.20100512.N114+115	1005012-01
Dodecane	U	JF.8KM.SURF.WV.20100512.N069+070	1005012-02
Dodecane	U	JF.8KM.BLANK.DIWV.20100512.N073+074	1005012-03
Dodecane	U	JF.8KM.MIX.30.WV.20100512.N066+065	1005012-04
Dodecane	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05
Dodecane	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05D
Dodecane	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
Dodecane	U	JF.4KM.240FT.WV.20100512.N098+099	1005012-07
Dodecane	U	JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08
Dodecane	J	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
Dodecane	J	JF.2KM.DEEP.WV.20100513.N123+122	1005012-10
Dodecane	U	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
Dodecane	U	JF.2KM.400.WV.20100513.N150+151	1005012-12
Dodecane	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13
Dodecane	U	JF.2KM.400.WV.DUP.20100513.N158+159	1005012-14
Naphthalene	U	JF.4KM.SURF.DIWV.20100512.N114+115	1005012-01
Naphthalene	U	JF.8KM.SURF.WV.20100512.N069+070	1005012-02
Naphthalene	U	JF.8KM.BLANK.DIWV.20100512.N073+074	1005012-03
Naphthalene	U	JF.8KM.MIX.30.WV.20100512.N066+065	1005012-04
Naphthalene	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05
Naphthalene	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05D
Naphthalene	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
Naphthalene	U	JF.4KM.240FT.WV.20100512.N098+099	1005012-07
Naphthalene	U	JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08
Naphthalene	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
Naphthalene	U	JF.2KM.DEEP.WV.20100513.N123+122	1005012-10
Naphthalene	J	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11

Analyte Name	DV Qualifier	Client Sample ID	Laboratory ID
Naphthalene	U	JF.2KM.400.WV.20100513.N150+151	1005012-12
Naphthalene	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13
Naphthalene	U	JF.2KM.400.WV.DUP.20100513.N158+159	1005012-14
Tridecane	UJ	JF.4KM.SURF.DIWV.20100512.N114+115	1005012-01
Tridecane	UJ	JF.8KM.SURF.WV.20100512.N069+070	1005012-02
Tridecane	UJ	JF.8KM.BLANK.DIWV.20100512.N073+074	1005012-03
Tridecane	UJ	JF.8KM.MIX.30.WV.20100512.N066+065	1005012-04
Tridecane	UJ	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05
Tridecane	UJ	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05D
Tridecane	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
Tridecane	U	JF.4KM.240FT.WV.20100512.N098+099	1005012-07
Tridecane	J	JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08
Tridecane	J	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
Tridecane	J	JF.2KM.DEEP.WV.20100513.N123+122	1005012-10
Tridecane	U	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
Tridecane	U	JF.2KM.400.WV.20100513.N150+151	1005012-12
Tridecane	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13
Tridecane	U	JF.2KM.400.WV.DUP.20100513.N158+159	1005012-14
2-Methylnaphthalene	U	JF.8KM.SURF.WV.20100512.N069+070	1005012-02
2-Methylnaphthalene	U	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05
2-Methylnaphthalene	J	JF.2KM.LEESURF.WV.20100513.N166+167	1005012-05D
2-Methylnaphthalene	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
2-Methylnaphthalene	U	JF.4KM.240FT.WV.20100512.N098+099	1005012-07
2-Methylnaphthalene	U	JF.2KM.MIX.15.WV.20100513.N134+135	1005012-08
2-Methylnaphthalene	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
2-Methylnaphthalene	U	JF.2KM.DEEP.WV.20100513.N123+122	1005012-10
2-Methylnaphthalene	J	JF.2KM.MIX30.WV.20100513.N139+138	1005012-11
2-Methylnaphthalene	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13
1-Methylnaphthalene	U	JF.2KM.BLANK.DIWV.20100513.N162+163	1005012-06
1-Methylnaphthalene	U	JF.2KM.135FT.WV.20100513.N130+131	1005012-09
1-Methylnaphthalene	U	JF.2KM.DEEP.WV.20100513.N123+122	1005012-10
1-Methylnaphthalene	U	JF.2KM.SURF.WV.20100513.N146+147	1005012-13